

REMARKS

I. Application Status

Claims 33, 35-38, 40, 41, 44-47, and 61-65 were previously pending in the Subject Application. Claim 64 was the only independent claim.

Claims 33, 35-38, 40, 41, 44-47, and 61-65 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by, or alternatively, under 35 U.S.C. § 103(a) as allegedly being unpatentable over, U.S. Patent No. 6,234,724 to Satran et al. ("Satran").

Applicants respectfully traverse the rejections. Applicants respectfully request reconsideration, withdrawal of the rejections, and allowance of the Subject Application. All references to the "Specification" herein refer to the specification of the Subject Application as originally filed, not as published.

II. Amendments to the Claims

Claim 64 is amended herein to recite that the at least two substantially planar surfaces are substantially perpendicular to the bottom surface. Support for the amendment is found, for example, on page 8, lines 29-32. It is believed that the present amendments do not add any new matter to the Subject Application. The present amendments (and all prior amendments and cancellations) are made without prejudice or disclaimer to the subject matter of the claims as originally filed or as previously presented. Applicants do not acquiesce to or otherwise concede the correctness of the rejections to the previously presented claims. Applicants reserve the right to pursue the subject matter of the claims as originally filed (or as previously presented) in related applications. The amendments presented herein are made solely to expedite the prosecution of the Subject Application.

III. New Claims

New claims 66-68 are added herein. Support for new claims 66-68 may be found, for example, in previously presented claim 64 and in the Specification on page 8, lines 24-32. It is believed that the new claims do not add any new matter to the Subject Application.

IV. Claim Rejections under 35 U.S.C. §§ 102(b)/103(a)

The Office asserts that Satran inherently discloses the method recited in independent claim 64. Applicants respectfully disagree.

To establish inherent anticipation, the extrinsic evidence (*i.e.*, the cited reference – here, Satran) must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by a person skilled in the art. MPEP § 2112.IV, citing *In re Robertson*, 169 F.3d 743, 745 [49 USPQ2d 1949, 1950-51] (Fed. Cir. 1999). Inherency may not be established by probabilities or possibilities; inherency requires factual evidence of, or at least sound technological reasoning supporting an alleged inherent feature. *Id.*

In this regard, MPEP § 2112.IV provides that:

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Moreover, as quoted in MPEP § 2131.01(III):

To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

Accordingly, in order for the features recited in the claims of the Subject Application to have been inherent in the disclosure of Satran, as asserted by the Office, the insert receiving pockets described in Satran must necessarily be formed using tangential milling.

However, as previously discussed, for example, in the two declarations under 37 C.F.R. § 1.132 of X. Daniel Fang (dated October 11, 2007 and August 18, 2008, respectively), it is not physically possible to fully form the receiving pockets described in Satran using a tangential milling technique. Rather, the physical features of the receiving pockets described in Satran require the use of axial milling.

First, Applicants note that the Office takes official notice, without citing any support, that:

. . . Tangential-milling cutters orientate inserts so that they lie flat in the cutter rather than standing up, as in a conventional configuration. This aligns the insert's strongest cross section with the main cutting force vector. The change in configuration can double or triple edge life and improve process security in rough-milling applications while enabling higher material-removal rates. Hence tangential milling would have been a desirable method choice to one skilled in the art. . . .

(Office Action, p.3, ll. 3-9). The Office cannot simply take official notice of these purported facts in this case, especially when the issue is important to the consideration of patentability. MPEP § 2144.03 states that "[i]n certain circumstances where appropriate, an examiner may take official notice of facts not in the record or rely on 'common knowledge' in making a rejection, however such rejections should be judiciously applied." (Emphases added). MPEP § 2144.03 further states:

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known.

For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.

Any rejection based on assertions that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner's conclusion should be judiciously applied. Furthermore, as noted by the court in *Ahlert*, any facts so noticed should be of notorious character and serve only to 'fill in the gaps' in an insubstantial manner which might exist in the evidentiary showing made by the examiner to support a particular ground for rejection. It is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based. [Citations omitted.]

This is clearly not an appropriate application of official notice. The purported facts regarding "tangential-milling cutters" are not of a "notorious" or "insubstantial" character in connection with the rejections. Instead, the issue arguably is very significant to the question of patentability. As stated in the MPEP § 2144.03:

'It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. [*In re Zurko*, 258 F.3d 1379, 1385 (Fed. Cir. 2001)] ('[T]he Board cannot simply reach conclusions based on its own understanding or experience or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.'). While the court explained that, 'as an administrative tribunal the Board clearly has expertise in the subject matter over which it exercises jurisdiction,' it made clear that such 'expertise may provide sufficient support for conclusions [only] as to peripheral issues.' *Id.* at 1385-86 []. As the court held in *Zurko*, an assessment of basic knowledge and common sense that is not based on any evidence in the record lacks substantial evidence support. *Id.* at 1385 [].

Therefore, the Office's inherency-based anticipation rejection, and the alternative obviousness rejection, cannot be maintained for at least the reason that both rejection bases lack proper support in the Office Action. Further, the Office Action issued on November 25, 2008 for the Subject Application contained the following statement (p.3, ll.8-10):

The examiner submits that inherent anticipation of claims can occur regardless of the extent to which the prior art describes features of the claims, and regardless of the absence of any prior recognition that the claimed invention previously existed.

Applicants respectfully submit that this is an incorrect statement of the law as set forth in the controlling cases of the United States Court of Appeals for the Federal Circuit and as described in the MPEP, *supra*. The Office is required to follow legal precedent concerning anticipation under 35 U.S.C. § 102.

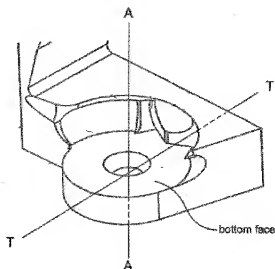
Before discussing the reasons why the receiving pockets described in Satran cannot be fully formed using tangential milling, it will be helpful to discuss the differences between the "axial" method and the "tangential" method for manufacturing tool holder pockets. As used in the Subject Application, axial milling and tangential milling refer to the method used to form the insert pockets on a cutting tool holder, and not to the manner of operation of a modular cutting tool itself (*i.e.*, an assembly comprising cutting inserts positioned in pockets on the tool holder). It is believed that the Office may be referring to a method of using a modular cutting tool, not a method of forming an insert pocket on a modular cutting tool holder.

As noted above, the Office asserts the following (Office Action, p.3, ll. 3-9):

. . . Tangential-milling cutters orientate inserts so that they lie flat in the cutter rather than standing up, as in a conventional configuration. This aligns the insert's strongest cross section with the main cutting force vector. The change in configuration can double or triple edge life and improve process security in rough-milling applications while enabling higher material-removal rates. Hence tangential milling would have been a desirable method choice to one skilled in the art. . . .

Accordingly, when referring to tangential milling, the Office refers to the manner in which a cutting insert is positioned in a pocket relative to the cutting vector (*i.e.*, cutting direction) during use of an assembled modular cutting tool. However, as used in the Subject Application, the term "tangential milling" and variations thereof refer to the orientation and the direction of approach of a milling cutter relative to an insert pocket during the formation (*i.e.*, the manufacturing or fabrication) of the insert pocket

itself on the tool holder. To illustrate, a modified version of Figure 3 of the Subject Application is provided below in which orthogonal axes, labeled A-A and T-T, are shown superimposed over the Figure.



The axis labeled A-A is generally perpendicular to the bottom face of the illustrated pocket, and the axis labeled T-T is generally parallel to the bottom face of the illustrated pocket. When axially milling a tool holder to form an insert pocket, the milling cutter enters the tool holder workpiece along a direction parallel to axis A-A. In contrast, when tangentially milling a tool holder to form an insert pocket, the milling cutter enters the tool holder workpiece along a direction parallel to axis T-T. In other words, in a tangential milling method of forming an insert pocket, the milling cutter approaches the pocket in a direction parallel to the pocket bottom face, rather than in an axial direction perpendicular to the pocket bottom face.

Accordingly, Applicants do not understand the relevance of the Office's reference to the orientation of cutting inserts relative to the cutting vector of an assembled modular cutting tool. Further, to the extent that the Office's factual assertions regarding "tangential-milling cutters" may be relevant, Applicants note that the factual assertions are not supported by any evidence of record and, therefore, are insufficient to establish a *prima facie* case of anticipation or obviousness.

Furthermore, the previously submitted declarations under 37 C.F.R. § 1.132 of Dr. X. Daniel Fang provide uncontraverted testimonial evidence from a person having at least an ordinary level of skill in the art establishing that the cutting insert pocket (52) depicted in Figures 3, 4, and 5 of Satran could not be fully formed by tangential milling. The Office has not rebutted or otherwise substantively addressed the uncontraverted facts presented in the declarations. In fact, the Office has not commented at all on the declarations, beyond simply stating that they are "not deemed to be persuasive." Applicants respectfully submit that the Office cannot apply such cursory treatment to a declaration submitted by an inventor who has substantial experience in the relevant art area and that directly addresses a significant factual issue in the examination. The Office has provided no explanation for concluding that the declarations are unpersuasive. In this regard, MPEP § 716.01 states:

Where the evidence [presented in a declaration] is insufficient to overcome the rejection, the examiner must specifically explain why the evidence is insufficient. General statements such as 'the declaration lacks technical validity' or 'the evidence is not commensurate with the scope of the claims' without an explanation supporting such findings are insufficient.

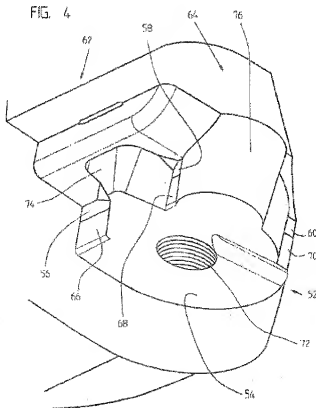
Applicants respectfully submit that the uncontraverted evidence of record shows that the insert pocket of Satran cannot be fully machined using tangential milling. The Office cannot dismiss the declarations as being "unpersuasive" without providing a well-grounded technical basis for doing so.

Indeed, Applicants respectfully submit that there is no basis for the Office to deem the declarations unpersuasive because the facts presented in the declarations are uncontraverted by any evidence in the record, are technologically accurate, and are sufficient to show that a *prima facie* case of anticipation or obviousness has not been established in view of Satran.

In order to tangentially mill a pocket in a tool holder, the milling cutter must be able to cut out the structural features of the pocket when the milling cutter advances into the pocket perpendicular to the axis of the pocket (*i.e.*, parallel to the bottom surface of the pocket). This requires cutting out the structural features of the pocket

with a milling cutter that approaches and enters the tool holder parallel to the bottom surface of the pocket being machined. As explained in the declarations of X. Daniel Fang, the pocket configuration described and depicted in Satran includes geometric features that cannot be formed using tangential milling (*i.e.*, they cannot be cut out using a milling cutter approaching and entering the holder parallel to the bottom surface of the pocket being machined).

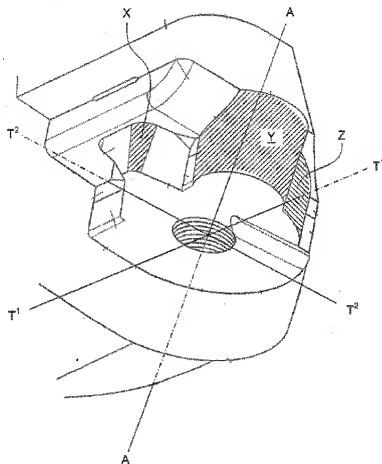
Satran discloses a pocket (52) that is formed with a base support surface (54) and at least two, and preferably three, lateral support surfaces (56, 58, 60) located for abutting angularly spaced abutment surfaces on a cutting insert. (See Satran, Fig. 4, reproduced below).



The pocket (52) of Satran includes several curved and recessed surfaces that extend in directions that are not parallel to the bottom surface (54) of the insert pocket (52). These surfaces cannot be fully formed using tangential milling because the axis of the milling cutter would be aligned parallel to the pocket's bottom surface and, therefore,

would not be able to form, for example, the curved and recessed surfaces. See the declarations of X. Daniel Fang, *supra*. To illustrate, a modified version of Figure 4 of Satran is provided below in which orthogonal axes, labeled A-A, T¹-T¹, and T²-T², are shown superimposed over the original Figure.

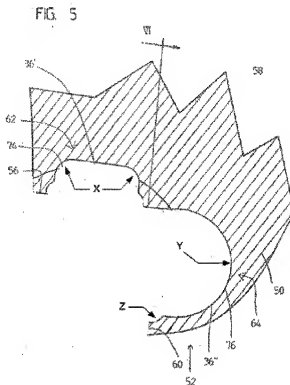
FIG. 4



Axis A-A is parallel to the axis of the pocket and perpendicular to the base of the pocket (*i.e.*, axial to the pocket), and axes T¹-T¹ and T²-T² are perpendicular to the axis of the pocket and parallel to the base of the pocket (*i.e.*, tangent to the pocket). A milling cutter tangentially approaching and entering the pocket (52) along an axis such as T¹-T¹, T²-T², or any other tangential axis, would not be able to form, for example, the curved and recessed surfaces indicated with cross-hatching and labeled X, Y, and Z in the above figure.

The surfaces labeled X, Y, and Z are the curved and recessed surfaces of the relief hollows (74) and (76), and the curved and recessed surface between the relief hollow (76) and the lateral surfaces (60, 70), respectively. Each of these curved and recessed lateral surfaces extends in a direction that is not substantially parallel (tangent) to the bottom surface (54) of the insert pocket (52). Instead, these particular surfaces extend in a direction that is normal to the bottom surface (54) of the insert pocket (52). These surfaces would have to be shaped using an axial milling technique in which the milling cutter advances into the workpiece along an axis that is generally perpendicular to the bottom surface (54) of the insert pocket (52), *i.e.*, parallel to axis A-A in the above figure.

As noted by Dr. Fang in the declarations of record, Figure 5 of Satran confirms that the various curved and recessed surfaces of the insert pocket (52) could not be fully formed using tangential milling. Figure 5 of Satran (a modified version of which is provided below) shows the contour of a section through the two lateral relief hollows (74) and (76) viewed in a direction perpendicular to bottom surface (54).



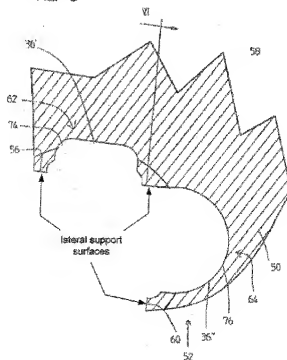
Again, the surfaces labeled X, Y, and Z are the curved and recessed surfaces of the relief hollows (74) and (76), and the curved and recessed surface between the relief hollow (76) and the lateral surfaces (60, 70), respectively. The surfaces labeled X, Y, and Z would have to be shaped using an axial milling technique in which the milling cutter advances into the workpiece along an axis that is generally perpendicular to the viewing plane of Figure 5 of Satran. The surfaces labeled X, Y, and Z could not have been formed by a milling cutter advancing into the pocket (52) along an axis parallel to the viewing plane of Figure 5 of Satran because of the recessed and curved shapes.

Accordingly, the claims of the Subject Application are not anticipated by, and would not have been obvious in view of, Satran because the insert pocket described and depicted in Satran cannot be formed by a tangential milling method. Therefore, Satran does not inherently disclose or suggest the methods recited in the claims of the Subject Application. Further, Applicants respectfully submit that Satran does not disclose or suggest the structural features recited in the claims of the Subject Application and, therefore, Satran does not anticipate, and would not have rendered obvious, the recited methods.

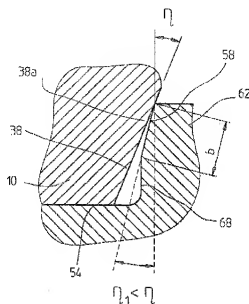
Independent claim 64 recites forming an insert pocket comprising a bottom face, a side wall, and an antirotation stop protruding from the side wall and comprising at least two substantially planar surfaces that are substantially perpendicular to the bottom surface. In the Office Action, the Office identifies the insert pocket (52) and the bottom surface (54) of Satran; however, the Office does not identify the structures described in Satran that are apparently interpreted by the Office as being equivalent to the side wall, the antirotation stop protruding from the side wall, and the at least two substantially planar surfaces of the antirotation stop, recited in claim 64 of the Subject Application. Notwithstanding, Applicants respectfully submit that Satran does not disclose or suggest the structures or configuration recited in claim 64.

Presumably, the Office contends that the lateral support surfaces (56, 58, 60) disclosed in Satran correspond to the antirotation stop recited in claim 64.

FIG. 5



Applicants respectfully submit that the lateral support surfaces (56, 58, 60) disclosed in Satran do not each comprise at least two substantially planar surfaces that are substantially perpendicular to the bottom surface, as recited in claim 64. This is readily apparent from Figure 6 of Satran, reproduced below.



As shown in Figure 6 of Satran, the lateral support surface (58) is not substantially perpendicular to bottom surface (54). Indeed, as expressly stated in Satran:

As also exemplified in FIG. 6, the support surfaces lie on planes which are slanted in such a way as to match the slant of the insert lateral abutment surfaces 38 [of an insert], i.e., they make an angle with a normal to the base [54] of the platform of the receiving pocket that substantially equal to the angle θ made by the insert lateral surfaces 38. (Satran, c.10, ll.34-39, emphasis added).

The angle made by the insert lateral surfaces 38 in Satran is not parallel to the axis of the insert (see, e.g., FIGS. 1B and 1D). Therefore, the matching angle of the support surfaces in Satran cannot be perpendicular to the bottom surface (54) of the pocket (see FIG. 6).

In this manner, Satran teaches that the lateral support surfaces (which the Office apparently asserts are equivalent to the antirotation stop recited in claim 64) form a greater than 90-degree angle with respect to the bottom surface (54). As such, Satran teaches away from an antirotation stop protruding from a side wall and comprising at least two substantially planar surfaces that are each substantially perpendicular to a bottom surface, as recited in claim 64. Applicants note that a cited reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. MPEP § 2141.02(VI). A reference teaches away when a person skilled in art, upon considering the reference, would be lead in a direction different from the claimed subject matter. MPEP § 2145(X)(D)(1).

In addition, independent claim 67 (and dependent claim 66) recites "a single antirotation stop". In contrast, the invention disclosed in Satran requires at least two lateral support surfaces (c.9, ll.65-67, FIGS. 3, 4, 5, 10, 11, 12, 13, and 16). Accordingly, Satran cannot anticipate claims 67 and 66. Further, a person skilled in the art would not have reason to modify the invention disclosed in Satran to comprise a single lateral support surface because the principle of operation described in Satran requires at least two lateral support surfaces. See MPEP § 2143.01(VI) (if a proposed modification of the prior art would change the principle of operation of the prior art

invention being modified, then the teachings of the references are not sufficient to establish a *prima facie* case of obviousness). Indeed, a proposed modification cannot "require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." MPEP § 2143.01(VI), citing *In re Ratti*, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959).

Thus, as discussed above, the claims of the Subject Application are not anticipated by Satran, nor would the claims have been obvious in view of Satran. Therefore, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §§ 102(b) and 103(a).

V. Conclusion

The pending claims are believed to be in condition for allowance for at least the reasons set forth herein. Applicants respectfully request favorable reconsideration and allowance of the Subject Application.


Applicants' present Response should not be taken as acquiescence to any of the specific rejections, assertions, and statements presented in the Office Action that Applicants have not explicitly addressed herein. Applicants reserve the right to specifically address all such rejections, assertions, and statements in continuing applications, subsequent responses, and/or appeal or pre-appeal proceedings, if necessary.

If the undersigned can be of assistance to the Examiner in addressing any additional issues to advance the application to a condition for allowance, please contact the undersigned at the number set forth below.

Respectfully submitted,

April 28, 2010

Date _____


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